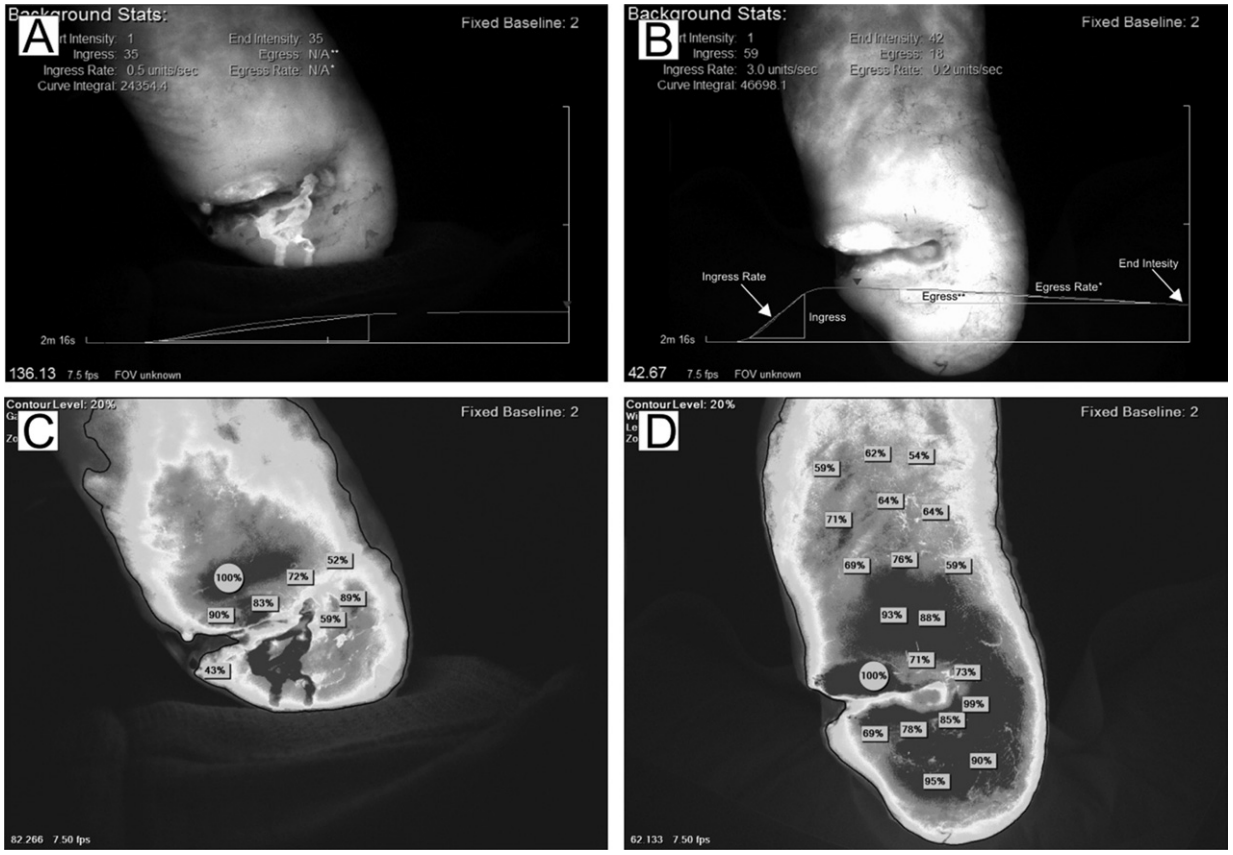

Fig.

Author Disclosures: D. G. Armstrong: Nothing to disclose; **J. D. Braun**: Nothing to disclose; **J. L. Mills**: Nothing to disclose; **D. Perry**: Nothing to disclose; **M. Trinidad-Hernandez**: Nothing to disclose.

RR11.

Imaging Predictors of Cranial Nerve Injury in Carotid Body Tumor Resections

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Objectives: Cranial nerve injury (CNI) remains an important complication of carotid body tumor (CBT) resection. The Shamblin classification has been used to predict CNI but it is subjective. Our objective was to determine imaging criteria for predicting CNI during CBT resections.

Methods: Retrospective review of all consecutive patients surgically treated for CBTs at our institution from 2000 to 2010. Outcomes were compared between patients with CNI and those without it (NCNI group). A vascular radiologist reviewed all CT and MR scans from which tumor dimensions, volumes, and extent relative to the vertebral bodies and angle of the jaw were calculated.

Results: Fifty-six patients with 61 CBT resections were reviewed. Of these, 47 patients (52 CBT resections) had CT or MR angiography available for review. Seventeen patients (20 CBT resections) sustained a CNI and 30 (32 CBT resections) did not (NCNI). Fifteen nerve injuries were temporary and 5 were permanent. Age, gender, family history, number of SDH(x) mutations, and bilateral CBT were similar between the groups. The number of patients treated by excision only, those who needed carotid artery reconstruction, operative time, and blood loss were similar between the two groups. Those patients who underwent pre-operative embolization had more CNI (75% vs. 44%, $P = .04$). The CT or MR predictors for any cranial nerve injury were superior extent of the CBT in relation to the vertebral bodies (C1 vs. C2, $P = .001$) and lateral margin of the CBT from the angle of the jaw (5mm vs. 10mm, $P = .04$). CBT volume, percent encasement of the CBT around the carotid artery, shape (lobulated vs. ovoid), inferior extent of the CBT, and homogeneity were not significantly different between the groups.

Conclusions: CBTs with a superior extent to the C1 vertebral level or with a lateral margin less than 5mm from

the angle of the jaw on CT or MR are at risk for cranial nerve injury during resection.

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RR12. CT Angiography-Derived Duplex Ultrasound Velocity Criteria in Patients with Carotid Artery Stenosis

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Objectives: Widely used carotid duplex ultrasound (DUS) velocity criteria (VC) to determine percent stenosis, and consequential benefit of carotid endarterectomy, are based on conventional angiography. DUS VC have not been developed with the use of CT angiography (CTA) derived measurements. The objective was to determine optimal carotid DUS VC from CTA-derived measurements with the NASCET method for 50 and 80% stenosis.

Methods: A retrospective review of all patients who underwent carotid DUS and CTA from 2000 - 2009 was performed. Vessel diameters were made on CTA and DUS velocities recorded. Percent stenosis was calculated using the NASCET method. Receiver operating characteristic (ROC) curves were generated for internal carotid artery (ICA) peak systolic velocity (PSV), ICA end diastolic velocity (EDV), and ICA PSV to common carotid artery PSV ratio (PSVR) for 50 and 80% stenosis. Velocity cutpoints were determined with equal weighting of sensitivity and specificity.

Results: A total of 610 vessels were analyzed to create the ROC curves (Table). For 50% stenosis analysis yielded ideal cutpoints for PSV, EDV, and PSVR of 130 cm/sec, 42 cm/sec, and 1.75. For 80% stenosis analysis yielded ideal cutpoints for PSV, EDV, and PSVR of 297 cm/sec, 84 cm/sec, and 3.06.

Conclusions: CTA-derived DUS velocity criteria appear to be reliable in defining 50% and 80% stenosis in patients with carotid artery stenosis. The carotid DUS VC defined in this study is different than either the Zwieble or Standness criteria for the same percent stenosis.

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RR13.

Statin Therapy after Infrainguinal Bypass Surgery for Critical Limb Ischemia Is Associated with Improved Five-Year Survival

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Objectives: While statin therapy has been linked to fewer short-term complications after lower extremity bypass (LEB), its effect on long-term survival in such patients is uncertain. Therefore, we examined associations between statin use and long-term mortality after LEB.

Methods: We used the Vascular Study Group of New England registry to study 2,067 patients (71% male, mean age 67 yrs, 67% with CLI) who underwent infrainguinal bypass from 2003 - 2011. Of these, 1,537 (74%) were on statins peri-operatively and at 1-yr follow-up, while 530 received no statin. We examined crude, adjusted and propensity-matched 5-yr survival (via Social Security Death Index), and 1-yr amputation and graft occlusion rates.

Results: Patients on statins had more coronary disease (38% vs 22%, $P < .001$), diabetes (51% vs 36%, $P < .001$), hypertension (89% vs 77%, $P < .001$) and prior revascularization procedures (50% vs 38%, $P < .001$). Despite higher comorbidity burdens, long-term survival was better for patients on statins in crude (RR=0.7, $P < .001$), adjusted (HR=0.7, $P = .001$) and propensity- matched analyses (HR=0.7, $P = .03$, Fig). In subgroup analysis, a survival advantage was evident in patients with CLI, but not claudication. Statin therapy did not affect 1-yr rates of major amputation (12% vs 11%, $P = .84$) or graft occlusion (20% vs 18%, $P = .58$) in CLI patients.

Table.

	AUC (SE)	*95% confidence interval*	*Velocity criteria*	*Sensitivity (%)*	*Specificity (%)*
> 50% PSV	0.926 (0.012)	0.904-0.949	≥ 130 cm/sec	87.9	84.3
> 50% EDV	0.884 (0.016)	0.852-0.916	≥ 42 cm/sec	81.1	84.7
> 50% ICA/CCA PSV ratio	0.924 (0.012)	0.902-0.947	≥ 1.75	87.4	85.8
> 80% PSV	0.946 (0.010)	0.925-0.966	≥ 297 cm/sec	88.9	88.4
> 80% EDV	0.954 (0.013)	0.929-0.979	≥ 84 cm/sec	93.3	88.4
> 80% ICA/CCA PSV ratio	0.913 (0.022)	0.869-0.957	≥ 3.06	93.3	84.6